

**Report on 2003 *Lampsilis higginsii* Brood Stock Collection and Stockpiling in
the Wisconsin River near Prairie du Sac, Wisconsin.**

Wisconsin Department of Natural Resources.

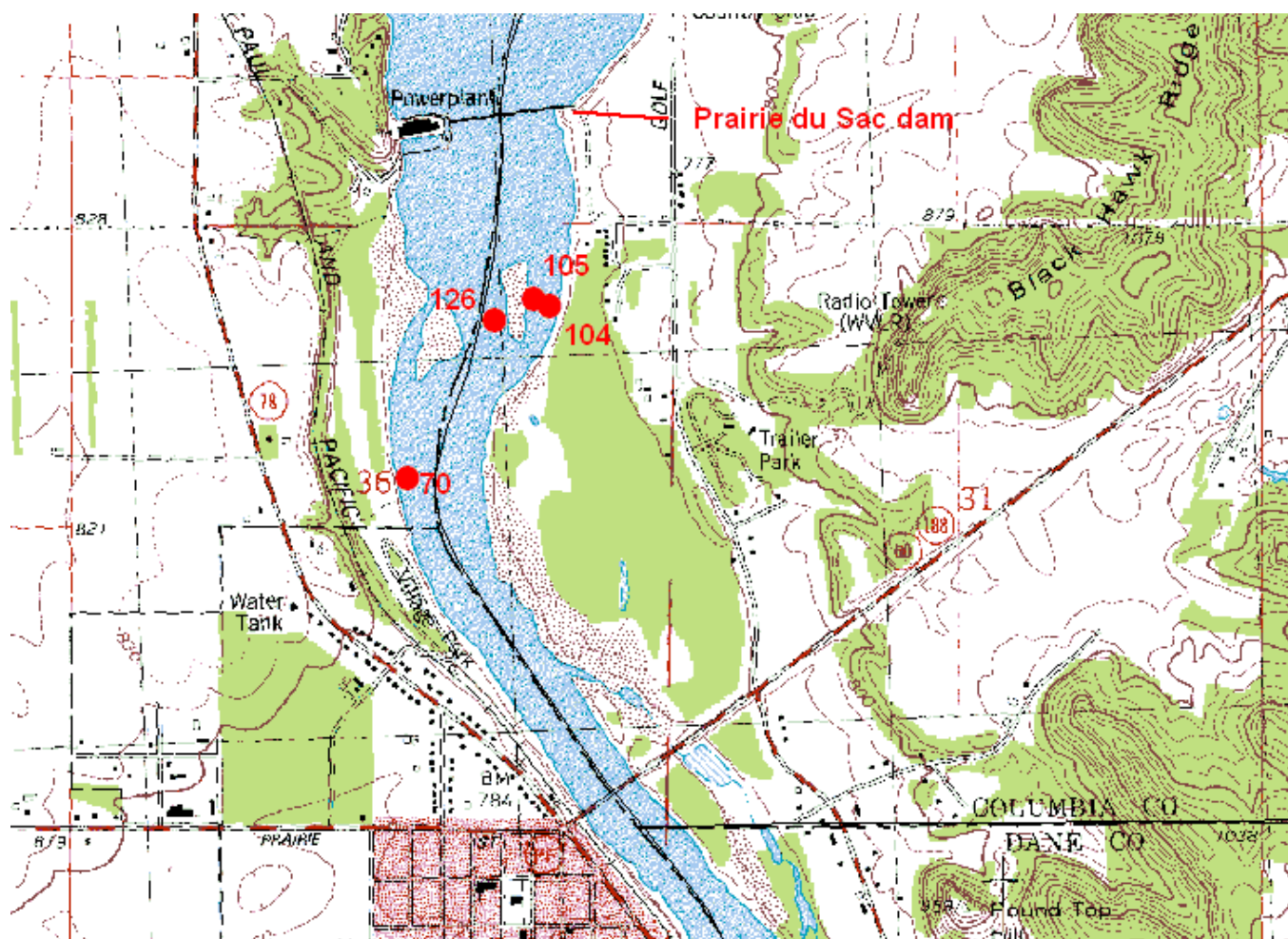
31 March 2004.

This is a report on the 2003 brood stock collection and stockpiling of *Lampsilis higginsii* in the Wisconsin River, near Prairie du Sac, Wisconsin during April, May and July of 2003. This effort was part of mussel propagation related to the continued operation and maintenance of the Mississippi River System Navigation project by the U. S. Army Corps of Engineers in cooperation with the associated, multi-agency Mussel Coordination Team.

Persons involved in these 2003 activities were staff from the U. S. Army Corps of Engineers, U. S. Fish and Wildlife Service and the Wisconsin Department of Natural Resources.

During 2003, we collected *L. higginsii* brood stock during April 2nd for use at the Genoa National Fish Hatchery for artificial propagation. These were returned to the river on May 29th. During July 15th, we stockpiled brood stock and other mussels for future use in artificial propagation.

Figure 1. 2003 Sampling and Collection Station Locations, Wisconsin River near Prairie du Sac, Wisconsin.



In April, we collected six *L. higginsii* from Station 70 (see Figure 1 and Table 1) of which two were gravid females. These two were sent to the Genoa National Fish Hatchery in a cooler containing aerated river water to be used for artificial propagation. These mussels, whose tag numbers were 933 and 932, were confirmed gravid at the hatchery and contained mostly unfertilized eggs. What few glochidia were available were used to infect 34 largemouth bass containing an

estimated 4910 transformers which were released into the lower Wisconsin River. These two females were returned to station 104 on 29 May 2003.

Table 1. Station Locations on the Wisconsin River near Prairie du Sac Sampled During 2003.

STATION NUMBER	WISCONSIN RIVER MILE	LEGAL DESCRIPTION	LATITUDE & LONGITUDE	COMMENTS
70	91.69	Twp. 10N, Rng. 6E, Sec. 36, SW of SW of NE. Sauk County, WI.	43°18'05.2"N 89°43'40.2"W	Hwy 12 Second Relocation Station.
104	91.99	Twp. 10N, Rng. 6E, Sec. 36, SW of NE of NE. Columbia County, WI.	43° 18' 19.7"N 89° 43' 23.3"W	Hwy 12 third Relocation Station and stockpile.
105	92.01	Twp. 10N, Rng. 6E, Sec. 36, NW of NE of NE. Columbia County, WI.	43° 18' 20.5"N 89° 43' 25.1"W	In side channel E of island.
126	91.96	Twp. 10N, Rng. 6E, Sec. 36, SE of NW of NE. Columbia County, WI.	43° 18' 18.6"N 89° 43' 29.9"W	On W side of island.

On July 15th 2003, a substantial effort was made to locate and stockpile *L. higginsii* for future use as brood stock. During this summer's stockpiling effort, we collected a total of 1 additional *L. higginsii* (Table 2) (tag number DH11). This mussel was stockpiled at Station 104 soon after initial collection.

We found a total of 7 *L. higginsii* in the Wisconsin River during 2003 (Table 2). Three of these were females and 4 were males. Of these 3 females, two were gravid. Both of these gravid females had marsupial contents dominated by unfertilized eggs. This represents a low brooding rate and fertility rate compared to data from the St. Croix and Mississippi rivers. Wisconsin River data from previous collections also showed a low brooding rate along with presence of sterile females (Wisconsin Department of Natural Resources, 2003). Low brooding and fertility rates could be due to a very low population density. Population density of *L. higginsii* at Prairie du Sac is very low. No specimens appeared in 80 square meter quadrats done during 1988 and 1997 (Wisconsin Department of Natural Resources, Unpub. data). During these times, the relative abundance of this species was less than 0.1%. These population densities and relative abundances are substantially lower than other locations where *L. higginsii* occurs and reproduces such as the lower St. Croix and upper Mississippi rivers.

Table 2. Specimen Specific Mussel Data collected during 2003 from the Wisconsin River near Prairie du Sac.

TAXON	TAG NUMBER	LIVING OR DEAD	DATE	STATION NUMBER	LENGTH	HEIGHT	AGE	SEX	GRAVID	COMMENT
<i>L. higginsii</i>	8	L	02-Apr-03	70	95	74	15	F	N	
<i>L. higginsii</i>	151	L	02-Apr-03	70	79	54	14	M		
<i>L. higginsii</i>	932	L	02-Apr-03	70	70	55	7	F	Y	TO GENOA NATIONAL FISH HATCHERY WHERE FOUND MOSTLY UNFERTILIZED EGGS. SEEN DISPLAYING IN RIVER.
<i>L. higginsii</i>	933	L	02-Apr-03	70	76	60	12	F	Y	TO GENOA NATIONAL FISH HATCHERY WHERE FOUND MOSTLY UNFERTILIZED EGGS. SEEN DISPLAYING IN RIVER.
<i>L. higginsii</i>	934	L	02-Apr-03	70	90	60	15	M		
<i>L. higginsii</i>	934	L	02-Apr-03	70	95	71	17	F	N	NO BLACK MARGINS ON DEMIBRANCHS.
<i>L. siliquoidea</i>	LSW1	L	02-Apr-03	70	77	56	6	F	Y	PHOTO TAKEN. CONCHOLOGY OF <i>L. HIGGINSII</i> .
<i>L. siliquoidea</i>	LSW2	L	02-Apr-03	70	92	51	7	M		
<i>L. cardium</i>		L	02-Apr-03	70	.	.	.	F		
<i>L. cardium</i>		L	02-Apr-03	70	.	.	.	F		
<i>L. cardium</i>		L	02-Apr-03	70	.	.	.	F		
<i>L. cardium</i>		L	02-Apr-03	70	.	.	.	F		
<i>L. recta</i>		L	02-Apr-03	70	.	.	.	F	Y	
<i>A. p. plicata</i>		L	15-Jul-03	107	53	41	.			
<i>A. p. plicata</i>		L	15-Jul-03	108	23	18	.			
<i>F. flava</i>		L	15-Jul-03	107	38	32	.			
<i>F. flava</i>		L	15-Jul-03	116	40	34	.			
<i>F. flava</i>		L	15-Jul-03	116	39	34	.			
<i>F. flava</i>		L	15-Jul-03	121	53	46	.			
<i>L. higginsii</i>	DH11	L	15-Jul-03	105	72	51	7	M		
<i>L. cardium</i>		L	15-Jul-03	106	89	66	.	F		
<i>L. cardium</i>		L	15-Jul-03	106	97	69	.	M		
<i>L. cardium</i>		L	15-Jul-03	111	107	69	.	M		
<i>L. cardium</i>		L	15-Jul-03	112	7	4	.			
<i>L. cardium</i>		L	15-Jul-03	112	104	66	.	M		
<i>L. cardium</i>		L	15-Jul-03	112	21	14	.			
<i>L. cardium</i>		L	15-Jul-03	113	96	67	.	M		
<i>L. cardium</i>		L	15-Jul-03	116	106	70	.	M		
<i>L. cardium</i>		L	15-Jul-03	118	103	69	.	M		
<i>L. cardium</i>		L	15-Jul-03	118	78	55	.	F		
<i>L. cardium</i>		L	15-Jul-03	121	79	55	.	F		
<i>L. cardium</i>		L	15-Jul-03	121	101	72	.	M		
<i>L. cardium</i>		L	15-Jul-03	121	84	59	.	F		
<i>L. cardium</i>		L	15-Jul-03	121	102	69	.	M		
<i>L. cardium</i>		L	15-Jul-03	121	89	75	.	F		
<i>L. fragilis</i>		L	15-Jul-03	106	68	44	.			
<i>L. fragilis</i>		L	15-Jul-03	111	63	42	.			
<i>L. fragilis</i>		L	15-Jul-03	111	59	40	.			
<i>L. fragilis</i>		L	15-Jul-03	112	37	22	.			
<i>L. fragilis</i>		L	15-Jul-03	117	100	60	.			
<i>L. fragilis</i>		L	15-Jul-03	119	36	19	.			
<i>L. fragilis</i>		L	15-Jul-03	121	23	12	.			
<i>L. fragilis</i>		L	15-Jul-03	121	36	19	.			
<i>L. fragilis</i>		L	15-Jul-03	121	80	47	.			
<i>L. fragilis</i>		L	15-Jul-03	121	92	56	.			
<i>L. recta</i>		L	15-Jul-03	112	96	41	.			
<i>L. recta</i>		L	15-Jul-03	113	140	55	.	M		
<i>L. recta</i>		L	15-Jul-03	117	106	45	.	F		
<i>O. olivaria</i>		L	15-Jul-03	112	77	57	.			
<i>O. olivaria</i>		L	15-Jul-03	112	16	11	.			
<i>O. olivaria</i>		L	15-Jul-03	114	74	59	.			
<i>O. olivaria</i>		L	15-Jul-03	117	79	60	.			
<i>P. sintoxia</i>		L	15-Jul-03	111	20	17	.			
<i>P. alatus</i>		L	15-Jul-03	112	128	90	.			
<i>P. alatus</i>		L	15-Jul-03	116	126	98	.			
<i>Q. pustulosa pustulosa</i>		L	15-Jul-03	107	44	41	.			
<i>Q. pustulosa pustulosa</i>		L	15-Jul-03	107	40	35	.			
<i>Q. pustulosa pustulosa</i>		L	15-Jul-03	107	35	30	.			
<i>Q. pustulosa pustulosa</i>		L	15-Jul-03	121	63	55	.			

References Used

Wisconsin Department of Natural Resources. 2003. Report on 2002 *Lampsilis higginsii* Brood Stock Collection and Stockpiling in the Wisconsin River near Prairie du Sac, Wisconsin. Wisconsin Department of Natural Resources, La Crosse, Wisconsin. 17 pp.

APPENDIX 1.

COPIES OF FIELD DATA SHEETS.

WBIC: 17490 sheet 1 of 1 Source Code: 02 WI
Date (mmddyy): 040203 Waterbody: WISC. R. Site/Bed Name: Pn. du sac
7.5' Quad.: _____ Quadcode: _____ Lat: 43° 18' 25.2" N Long: 89° 43' 40.2" W
T 10 N, R 6E, S 36, _____ of _____ of _____ of _____ Co.: 57 (same) FAGO R. Mi.: 97.68
_____ N, R _____, S _____ of _____ of _____ of _____ Co.: _____ USACOE R. Mi.: _____

Area Sa. 'ed (m²) 5.51 Tran. or Stat. # 70 Sta. Dist. from Bank (m): 37 Bank (L or R): R H₂O °C: 5.9
Current 1 Depth (m) 1.7 SUBSTRATE: % bedrock _____ % hardpan _____ % boulder _____ % rubble 42.6
5 % gravel 20 % coarse sand 40 % fine sand 35 % muck & silt _____ % clay _____ % detritus _____

Method (circle one): 1=random pt. 2=transect 3=shore coll. 4=inventory 5=rare & assoc. 6=targeted
taxon 7= Harvest Sample 8=community rel. abund. 9=incremental coll. (by) other: *Gravid L. Higgins*

Crew (circle collector): Death, P. Short

Directions: at 2nd Haulie stockpile, 100m upstream of N end of rip-rap on N end of VFW bar, ~ 40 m out from shore. At pipe, rocks, fence, rip-rap.

Comments: 12.4°C at site. Ave = 12.15 - 12.45. CEC possible parameter for Geneva
Mudfish Hatchery. 11.8°C at hatchery trough. Colder 7.0°C at hatchery at 17:40.
Tempered 2 L. biggsii = roots at 9.8°C 17:43 - 18:26 (10.4°C) from the trough.

296h. Seen April 29. 1 x seen actively leaving stockpile. ~ 5cm of silt & algae over surface. As suspected, not a great reclamation prog. Flow @ 10 m down dam = 6000 cfs.

[illegible]

marked missiles
seen on 10/10/01 but
not taken "evidence"

E. heslopianus sp.

T. nebulosa 2.8

B. CONTAGIOUS

g. metanevra

A. valentia

Save 58745-760 (over)

SA Q2

WBIC: 1740 Sheet 1 of 1 Source Code: 02 WI
Date (mmddyy): 052903 Waterbody: Proctor Site/Bed Name: Proctor
7.5' Quad.: 1740 Quadcode: 1740 Lat: 43° 15' N Long: 89° 15' W
N, R, S, of of of Co.: 1740 Fago R. Mi.: 1740
T, N, R, S, of of of Co.: 1740 USACOE R. Mi.: 1740
Area Sa.'ed(m²) 1740 Tran or Stat.# 1740 Sta. Dist. From Bank(m) 1740 Bank (L or R): 1740 H2O C: 1740
Current Depth(m) 1740 SUBSTRATE: 1740 %bedrock 1740 %hardpan 1740 %boulder 1740 %rubble 1740
%gravel 1740 %coarse sand 1740 %fine sand 1740 %muck & silt 1740 %clay 1740 %detritus 1740
Method (circle one): 1=random pt. 2=transect 3=shore coll. 4=inventory 5=rare & assoc. 6=targeted taxon
7=harvest sample 8=community rel. abund. 9=incremental coll. (by 1740). Other: 1740
Crew (circle collector): 1740
Directions: Habitat 2nd USH 12 mixed sludgepile

Comments: found all markers that would give site 12
near bank

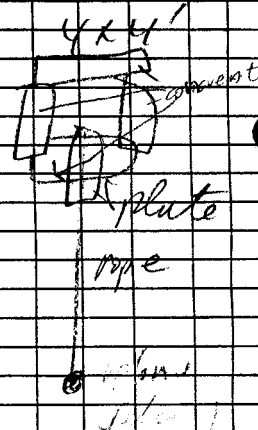
Taxon	Total # for taxon		Length	Height	Age	Sex	Gravid	Tag	+	Length	Height	Age	Sex	Gravid	Tag	+
	Living	Dead														
<i>T. venusta</i>	4	1				M		21					F		18	
						M		20					M		19	
						F							M		22	
						M		13					M		24	
						F							F			
						F		23					M		25	
						M							M			
						F										
<i>A. glauca</i>	6	0						1							1	
								1							1	
								1							1	
<i>A. corniculata</i>	3	0						1							1	
								1								
<i>Z. tenebrosa</i>	3	0						1							1	
<i>L. higginsi</i>	4	1				F		934					M		151	
						F		08								
						M		931								
<i>L. soliquoides</i>						M		15612					F			
<i>O. olivacea</i>	7	0						1							1	
								1								
<i>A. melanura</i>	4	0						11							17	
								14							16	

2601 flora #227 (C) 12 #58761-216

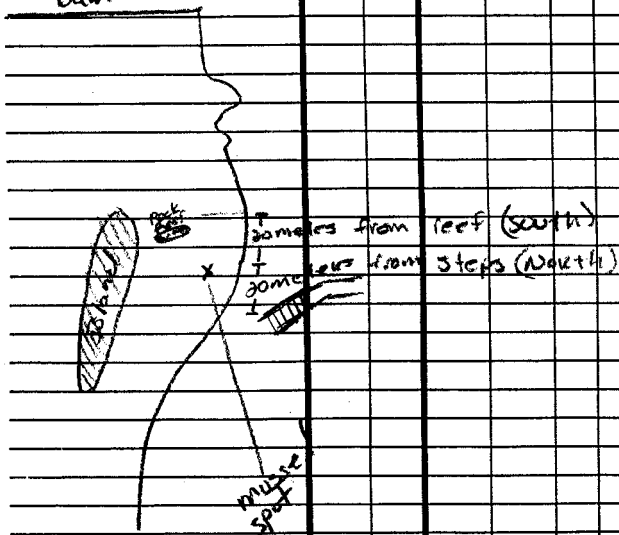
Taxon	Total # for taxon		Length	Height	Age	Sex	Gravid	Tag	Pres	Length	Height	Age	Sex	Gravid	Tag	Pres
	Living	Dead														
<i>C. pascuosa</i>	5	0						✓							✓	
<i>E. ferox</i>								✓								
<i>D. reflexa</i>	1	0						✓								
<i>P. alatus</i>	2	0						✓								✓
<i>A. contrarius</i>	1	0						✓								

the noted muscels moved to this
NEW STATION
 of 2 pheromone to Genoa and Fish location
 4 dimensions

GPS Reading ①	N	43	18	19.5
	W	89	43	23.5
②	N	43	18	19.8
	W	89	43	23.2
③	N	43	18	19.7
	W	89	43	23.3



Dam



general 11 SPV, 1/2 inch size 30 RL

Comments: morain added 4 acres to all her logged & marked muskeles in the site-channel stockpile south this spring.

[illegible]

BIC: 1179900 Sheet _____ of _____ Source Code: _____ WI
Date (mmddyy): 071503 Waterbody: WT. R. Site/Bed Name: P. d. s. r.
7.5' Quad.: _____ Quadcode: _____ Lat: _____° _____' _____"N Long: _____° _____' _____"W
_____ N, R, S, _____ of _____ of _____ Co.: _____ Fago R. Mi.: _____
T _____ N, R, S, _____ of _____ of _____ Co.: _____ USACOE R. Mi.: _____
Area Sa.'ed(m²) _____ Tran or Stat # _____ Sta. Dist. From Bank(m) _____ Bank (L or R): _____ H2O C: _____
Current Depth(m) _____ SUBSTRATE: _____ %bedrock _____ %hardpan _____ %boulder _____ %rubble
_____ %gravel _____ %coarse sand _____ %fine sand _____ %muck & silt _____ %clay _____ %detritus
Method (circle one): 1= random pt. 2= transect 3= shore coll. 4= inventory 5= rare & assoc. 6= targeted taxon
7= harvest sample 8= community rel. abun. 9= incremental coll. (by _____). Other: L. h. s. s.
Crew (circle collector): Bourne et al.; WFS (S. J. Gould)
Directions: along w side island just below dam, near LDB.

Comments:

[illegible]

APPENDIX 2.

PHOTOS OF MUSSELS COLLECTED AT PRAIRIE DU SAC DURING 2003.



L. higginsii, Wisc. R., Prairie du Sac, #151. 29 May 2003. WDNR photo.



L. siliquoides, Wisc. R., Prairie du Sac, Tagn LSW1. 2 April 2003. St. 70.



Wi. R., Havlik's second USHwy 12 relocation area (station 70). Removed all tagged. Near Prairie du Sac. 29 May 2003. WDNR ph